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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DEAN, RAYMOND S	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,905	MILLER ET AL.	
	Examiner	Art Unit	
	Raymond S. Dean	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 3 - 8, 10 - 13, 15 - 17,19, 21 - 22, and 24 - 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3 - 8, 10 - 13, 15 - 17,19, 21 - 22, and 24 - 25* is/are rejected.

7)☒ Claim(s) *16 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 13, 2006 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 8, 13, 19 and 22 have been considered but are moot in view of the new ground(s) of rejection.

Cornforth et al. (5,276,918) teaches a single connection line by way of which radio communication between the radio modem unit and RF signal booster occurs (Figure 1, connection line (25), Column 4 lines 35 – 37).

Hanawa et al. (5,890,077) teaches auto-logic configured to detect a DC offset on a multiple connection line, said DC offset being indicative of a connection of the radio modem unit to the RF signal booster unit (Figures 3, 7, Column 5 lines 63 – 67, Column 6 lines 1 – 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the connector (57, 97) will enable a connection line to be established between the portable phone and the booster, when the booster is connected/disconnected there will be a low voltage/high voltage,

which is a DC offset, on said connection line). Hanawa and Cornforth both teach a mobile phone connected to a booster via a connection line thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the single connection line taught by Cornforth in the system of Hanawa as an alternative means for providing a connection between the mobile phone and the booster. Examiner also respectfully disagrees with Applicants' assertion that Hanawa does not teach a DC offset. The low voltage, which occurs as a result of the short, is a small deviation, which is an offset, from the voltage level that corresponds to the booster being disconnected.

Claim Objections

3. Claims 16 and 22 objected to because of the following informalities: Claim 16 should depend from Claim 15 since Claim 14 has been cancelled and there is antecedent basis for **the** power control signals. Line 12 of Claim 22, "connector" should be changed to "connection" Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 5, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanawa et al. (5,890,077) in view of Cornforth et al. (5,276,918).

Regarding Claim 1, Hanawa teaches a system comprising: a radio modem unit (Figure 7, Column 4 lines 16 – 29); an RF signal booster unit connectable to the radio modem unit through a multiple line connection by way of which radio communication between the radio modem unit and RF signal booster occurs (Figures 3, 7, Column 5 lines 63 – 67, Column 6 lines 1 – 7, the connector (57, 97) will enable a connection line to be established between the portable phone and the booster); and auto-detect logic configured to detect a DC offset on said multiple line connection, said DC offset being indicative of a connection of the radio modem to the RF signal booster unit (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the auto-detect circuitry is the connection detector (96), when the booster is connected there is a short which means that there will be a low voltage level, which is a DC offset).

Hanawa does not teach a single connection line.

Cornforth teaches a single connection line (Figure 1, connection line (25), Column 4 lines 35 – 37).

Hanawa and Cornforth both teach a mobile phone connected to a booster via a connection line thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the single connection line taught by Cornforth in the system of Hanawa as an alternative means for providing a connection between the mobile phone and the booster.

Regarding Claim 3, Hanawa in view of Cornforth teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the auto-detect logic is located within the radio modem unit (Figure 7, Column 8 lines 38 – 39).

Regarding Claim 5, Hanawa in view of Cornforth teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the booster unit includes an element to reduce the DC power level to low if the radio modem unit is connected to the booster unit (Column 8 lines 60 – 67, Column 9 lines 1 – 3).

Regarding Claim 7, Hanawa in view of Cornforth teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the voltage on the multiple connection line is high if no booster unit is connected but is low if a booster unit is connected (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level).

6. Claims 8, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanawa et al. (5,890,077) in view of Cornforth et al. (5,276,918) and in further view of Pehrsson et al. (US 6,615,059).

Regarding Claim 8, Hanawa teaches a radio modem unit comprising a radio including a first DC offset circuit (Figure 7, Column 4 lines 16 – 29, Column 8 lines 60 – 67, Column 9 lines 1 – 3, since the portable phone transmits/receives RF signals there is an inherent radio, the detector circuit (96) comprises a circuit that applies a high voltage level to the base of the transistor (Q), since a dc offset is just a voltage level the

circuit that applies said voltage level to the base of the transistor (Q) is acting as the dc offset circuit); an RF signal connector operably connected to the radio (Figure 3), the connector being connectable to a RF antenna or a booster unit and including a multiple line connection adapted to carry an RF signal and a DC offset (Figures 3, 7, Column 5 lines 63 – 67, Column 6 lines 1 – 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the connector (57, 97) will enable a connection line to be established between the portable phone and the booster, when the booster is connected/disconnected there will be a low voltage/high voltage, which is a DC offset, on said connection line); and a detector unit adapted to detect the DC offset to determine whether the connector is connected to a booster unit based on an interaction between the first DC offset circuit and a second DC offset circuit included in the booster unit (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the booster (92) comprises a shorting circuit (98), which generates a low voltage level when said booster is connected, since a dc offset is just a voltage level the shorting circuit is also acting as a dc offset circuit, when the mobile phone (91) and the booster (92) are connected and disconnected there will be interaction between the dc-offset circuits in both the mobile phone and booster to produce a high voltage level or a low voltage level).

Hanawa does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit; second dc offset circuit comprising the other of the pull-up or pull-down circuits, and a single connection line.

Cornforth teaches a single connection line (Figure 1, connection line (25), Column 4 lines 35 – 37).

Hanawa and Cornforth both teach a mobile phone connected to a booster via a connection line thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the single connection line taught by Cornforth in the system of Hanawa as an alternative means for providing a connection between the mobile phone and the booster.

Hanawa in view of Cornforth does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit and second dc offset circuit comprising the other of the pull-up or pull-down circuits

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Hanawa in view of Cornforth with the pull-up and pull- down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Regarding Claim 10, Hanawa in view of Cornforth and in further view of Pehrsson teaches all of the claimed limitations recited in Claim 8. Hanawa further teaches wherein the DC offset of the connector is high if no booster unit is connected but is low if a booster unit is connected (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level).

Regarding Claim 12, Hanawa in view of Cornforth and in further view Pehrsson teaches all of the claimed limitations recited in Claim 8. Hanawa further teaches

wherein the radio modem unit is connected to a booster unit, the booster unit including a circuit to pull the DC offset at the connector to low (Column 8 lines 60 – 67, Column 9 lines 1 – 3).

7. Claims 4, 6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Cornforth et al. (5,276,918) as applied to Claims 1, 5, above, and further in view of Myrskog et al. (5,457,814).

Regarding Claims 4, Hanawa in view of Cornforth teaches all of the claimed limitations recited in Claims 1. Hanawa further teaches allowing the DC offset to be placed onto the multiple line connection (Column 8 lines 60 – 67, Column 9 lines 1 – 3).

Hanawa in view of Cornforth does not teach an inductor and preventing radio frequency energy from passing into the auto-detect logic.

Myrskog teaches an inductor and preventing radio frequency energy from passing up a line (Column 7 lines 7 – 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Hanawa in view of Cornforth for the purpose of preventing unwanted RF signals from propagating along a transmission line.

Regarding Claim 6, Hanawa in view of Cornforth teaches all of the claimed limitations recited in Claim 5. Hanawa in view of Cornforth does not teach an inductor.

Myrskog teaches an inductor (Column 7 lines 7 – 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Hanawa in view of Cornforth for the purpose of preventing unwanted RF signals from propagating along a transmission line.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Cornforth et al. (5,276,918) in view of Pehrsson et al. (US 6,615,059), as applied to Claim 8 above, and further in view of Myrskog et al. (5,457,814).

Regarding Claim 11, Hanawa in view of Cornforth and in further view of Pehrsson teaches all of the claimed limitations recited in Claim 8.

Hanawa in view of Cornforth and in further view of Pehrsson does not teach wherein an inductor is used as part of the detector unit.

Myrskog teaches an inductor (Column 7 lines 7 – 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Hanawa in view of Cornforth and in further view of Pehrsson for the purpose of preventing unwanted RF signals from propagating along a transmission line.

9. Claims 13, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Cornforth et al. (5,276,918) and in further view of Pehrsson et al. (US 6,615,059).

Regarding Claim 13, Hanawa teaches a system comprising: a radio modem unit including a first DC offset circuit (Figure 7, Column 4 lines 16 – 29, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the base band data modulates an RF carrier such that said base band data can be transmitted to the base station, the RF signal received from said base station is demodulated such that the base band data can be received thus the portable phone is acting as the radio modem, the detector circuit (96) comprises a circuit that applies a high voltage level to the base of the transistor (Q), since a dc offset is just a voltage level the circuit that applies said voltage level to the base of the transistor (Q) is acting as the dc offset circuit); and an RF signal booster unit including a second DC offset circuit (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the booster (92) comprises a shorting circuit (98), which generates a low voltage level when said booster is connected, since a dc offset is just a voltage level the shorting circuit is also acting as a dc offset circuit), wherein the booster unit is connectable to the radio modem unit with a multiple line connection adapted to transmit RF signals and a DC offset indicative of the presence of the booster unit based on an interaction between the first and second DC offset circuits (Figures 3, 7, Column 5 lines 63 – 67, Column 6 lines 1 – 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the connector (57, 97) will enable a connection line to be established between the portable phone and the booster, when the booster is connected/disconnected there will be a low voltage/high voltage, which is a DC offset, on said connection line, when the mobile phone (91) and the booster (92) are connected and disconnected there will be interaction between the dc-offset circuits in both the mobile phone and booster to produce a high voltage level or a low voltage

level), and wherein baseband signals are transmitted to the RF signal booster unit by way of the multiple line connection by the radio modem and are used by the booster unit to prepare for transmission (Figure 3, Column 6 lines 27 – 38, baseband signals are transmitted from processor (50) to processor (58) to control the booster unit such said booster unit can transmit).

Hanawa does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit; second dc offset circuit comprising the other of the pull-up or pull-down circuits, and a single coaxial connection line.

Cornforth teaches a single coaxial connection line (Figure 1, connection line (25), Column 4 lines 35 – 37).

Hanawa and Cornforth both teach a mobile phone connected to a booster via a connection line thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the single connection line taught by Cornforth in the system of Hanawa as an alternative means for providing a connection between the mobile phone and the booster.

Hanawa in view of Cornforth does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit and second dc offset circuit comprising the other of the pull-up or pull-down circuits

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Hanawa in view of Cornforth with

the pull-up and pull- down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Regarding Claim 22, Hanawa teaches a method of using a radio modem unit and an RF signal booster unit, the booster unit and radio modem unit connectable using a connector establishing a multiple line connection (Figures 3, 7, the connector (57, 97) will enable a connection line to be established between the portable phone and the booster), the method comprising: in the radio modem unit, detecting a DC offset on the multiple line connection to determine whether the booster unit is connected based on an interaction between a first DC offset circuit in the radio modem and a second DC offset circuit in the booster unit (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, the detector circuit (96) comprises a circuit that applies a high voltage level to the base of the transistor (Q), since a dc offset is just a voltage level the circuit that applies said voltage level to the base of the transistor (Q) is acting as the dc offset circuit, the booster (92) comprises a shorting circuit (98), which generates a low voltage level when said booster is connected, since a dc offset is just a voltage level the shorting circuit is also acting as a dc offset circuit, when the mobile phone (91) and the booster (92) are connected and disconnected there will be interaction between the dc-offset circuits in both the mobile phone and booster to produce a high voltage level or a low voltage level); if the booster unit is connected, transmitting base band signals on the multiple line connection from the radio modem to the booster unit to allow the booster unit to prepare for transmission

(Figure 3, Column 6 lines 27 – 38, baseband signals are transmitted from processor (50) to processor (58) to control the booster unit such said booster unit can transmit) and thereafter, transmitting an RF signal on the multiple line connection from the radio modem to the booster unit (Figure 3).

Hanawa does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit; a second dc offset circuit comprising the other of the pull-up or pull-down circuits, and a connection line.

Cornforth teaches a connection line (Figure 1, connection line (25), Column 4 lines 35 – 37).

Hanawa and Cornforth both teach a mobile phone connected to a booster via a connection line thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the single connection line taught by Cornforth in the system of Hanawa as an alternative means for providing a connection between the mobile phone and the booster.

Hanawa in view of Cornforth does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit and second dc offset circuit comprising the other of the pull-up or pull-down circuits

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Hanawa in view of Cornforth with the pull-up and pull- down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

10. Claims 15 – 17 and 24 – 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Cornforth et al. (5,276,918) in view of Pehrsson et al. (US 6,615,059), as applied to Claims 13, 22 above, and further in view of Barber (US 6,230,031 B1).

Regarding Claims 15, 24, Hanawa in view of Cornforth and in further view of Pehrsson teaches all of the claimed limitations recited in Claim 13, 22.

Hanawa in view of Cornforth and in further view of Pehrsson does not teach wherein the baseband signals are power control signals.

Barber teaches wherein the base band signals are power control signals (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Hanawa in view of Cornforth and in further view of Pehrsson with the power control circuitry of Barber for the purpose of controlling the amplification to compensate for RF signal loss as taught by Barber.

Regarding Claims 16, 25, Hanawa in view of Cornforth and in view of Pehrsson and in further view of Barber teaches all of the claimed limitations recited in Claims 15, 24. Barber further teaches wherein the power control signals are used to control the

power and channel selection (Column 5 lines 30 – 46, the channel can be the 800 MHz band or the 1.9 GHz band).

Regarding Claim 17, Hanawa in view of Cornforth and in further view of Pehrsson teaches all of the claimed limitations recited in Claim 13. Hanawa in view of Cornforth and in further view of Pehrsson does not teach wherein the RF signal booster unit that includes a switch that prevents RF energy from being provided to a power amplifier in the booster unit until a valid power controller message is received from the radio modem.

Barber teaches wherein the RF signal booster unit that includes a switch that prevents RF energy from being provided to a power amplifier in the booster unit until a valid power controller message is received from the wireless radio transceiver (Figure 4, Figure 5, Figure 6, Figure 9, Figure 10, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, Column 10 lines 17 – 24, the diodes/switches are reversed biased such that the incoming signal is severely attenuated thereby causing the signal transmission portion of the amplifier circuit to shut down, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPU in the booster module will reverse bias the diodes such that a particular amplification circuit will shut down based on the mode of the wireless radio transceiver, said radio transceiver mode control message is transmitted by the wireless radio transceiver CPU to the booster module CPU such that the booster module is configured to produce the correct power level).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the switch of Barber in the system of Hanawa in view of Cornforth and in further view of Pehrsson for the purpose controlling the amplification by the booster as taught by Barber.

11. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barber (US 6,230,031 B1) in view of Hanawa et al. (5,890,077) and in further view of Pehrsson et al. (US 6,615,059).

Regarding Claim 19, Barber teaches an RF signal booster unit adapted to amplify RF signals from a radio modem, (Abstract, Figure 1, Figure 4, Figure 5, Column 4 lines 66 – 67, Column 5 lines 1 – 10, the radio transceiver modulates and demodulates the signals that are transmitted and received thus said radio transceiver is acting as the radio modem), the booster unit including a switch that significantly attenuates the RF energy from the radio modem that is provided to a power amplifier in the booster unit by way of a single connection line (Figure 4, Figure 9, Figure 10, connection line (74), Column 10 lines 17 – 24, the diodes/switches are reversed biased such that the incoming signal is severely attenuated thereby causing the signal transmission portion of the amplifier circuit to shut down), until a valid power control message is received from the radio modem (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPU in the booster module will reverse bias the diodes such that a

particular amplification circuit will shut down based on the mode of the wireless radio transceiver, said radio transceiver mode control message is transmitted by the wireless radio transceiver CPU to the booster module CPU such that the booster module is configured to produce the correct power level), the switch comprising a pair of diodes arranged back-to-back and disposed in the RF signal path (Figure 10), such that when the switch is in the ON position RF signals pass through the diodes from the radio modem to the booster unit, and when the switch is in an OFF position, RF signals are precluded by the diodes from effectively passing from the radio modem to the booster unit (Figure 9, Figure 10, Column 10 lines 17 – 24, when the diodes/switches are reversed biased that is the OFF position, when said diodes/switches are forward biased that is the ON position, the booster comprises amplifier circuits that are shut down when the diodes/switches are reversed biased thus preventing the RF signals from passing to said booster).

Barber does not teach a radio modem including a first DC offset circuit which comprises one of a pull-up or pull-down circuit, a booster unit including a second DC offset circuit which comprises the other of the pull-up or pull-down circuits, interaction between the first and second DC offset circuits, and a single connection line adapted to further carry a DC offset indicative of the presence of the booster.

Hanawa teaches a radio modem including a first DC offset circuit (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the detector circuit (96) comprises a circuit that applies a high voltage level to the base of the transistor (Q), since a dc offset is just a voltage level the circuit that applies said voltage level to the base of the

transistor (Q) is acting as the dc offset circuit), a booster unit including a second DC offset circuit (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the booster (92) comprises a shorting circuit (98), which generates a low voltage level when said booster is connected, since a dc offset is just a voltage level the shorting circuit is also acting as a dc offset circuit), interaction between the first and second DC offset circuits (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the mobile phone (91) and the booster (92) are connected and disconnected there will be interaction between the dc-offset circuits in both the mobile phone and booster to produce a high voltage level or a low voltage level), and a connection line adapted to further carry a DC offset indicative of the presence of the booster (Figures 3, 7, Column 5 lines 63 – 67, Column 6 lines 1 – 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, the connector (57, 97) will enable a connection line to be established between the portable phone and the booster, when the booster is connected/disconnected there will be a low voltage/high voltage, which is a DC offset, on said connection line).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the dc offset circuits and the connection line circuitry of Hanawa in the system of Barber for the purposes of detecting whether the booster is connected and providing an alternative means for transmitting signals from the mobile phone to the booster.

Barber in view of Hanawa does not teach a first dc offset circuit comprising one of a pull-up or a pull-down circuit, a second dc offset circuit comprising the other of the pull-up or pull-down circuits, and a pair of diodes arranged back to back.

Pehrsson teaches a pull-up and pull-down circuit (See Column 6 lines 38 – 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dc offset circuits of Barber in view of Hanawa with the pull-up and pull- down circuits of Pehrsson as an alternative means for providing a high voltage level and a low voltage level.

Regarding Claim 21, Barber in view of Hanawa and in further view of Pehrsson teaches all of the claimed limitations recited in Claim 19. Barber further teaches wherein when the switch is in the ON position, current flows through the diodes and the RF impedance of the switch is reduced, but when the switch is in the OFF position, current is not flowing through the diodes, and the RF impedance of the switch is high (Column 10 lines 17 – 24, when the diodes/switches are reversed biased said switches will be in the OFF position, which means that the impedance will be high, when said diodes/switches are forward biased said switches will be in the ON position, which means that the impedance will be low thus this is an inherent characteristic).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S. Dean whose telephone number is 571-272-7877. The examiner can normally be reached on Monday-Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond S. Dean
May 8, 2006

EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600